a data manager for maintaining at each service node a local storage of managed objects and data needed for service processing within the service node and monitoring operational status of the local storage at the service nodes; and

at least one service administrator that controls the deployment and activation of services within said service processing system by distributing, from a global repository, managed objects and data to one or more data managers associated with said service nodes in said communications network.

A13

4. (Amended) A method for controlling the deployment and activation of services in a communications network having a plurality of service nodes, each service node comprising at least one logic execution environment that hosts managed objects, said method comprising:

maintaining at each of said service nodes a local data store of managed objects and data needed for service processing within the service node;

monitoring operational status of the local data store of the service nodes; and

selectively distributing, from a global repository, managed objects and data to one or more of said local stores associated with said service nodes in said communications network, so as to control where and when services are deployed and activated in said communications network.

REMARKS

In the Office Action, the Examiner objected to the drawings and the specification for minor informalities; rejected claim 2 under 35 U.S.C. § 112, second paragraph; rejected claims 1

and 2 under 35 U.S.C. § 102(e) as anticipated by Ueno et al. (U.S. Patent No. 5,991,811); and rejected claims 3 and 4 under 35 U.S.C. § 103(a) as unpatentable over Ueno et al. in view of Yagel et al. (U.S. Patent No. 6,324,275).

By this Amendment, Applicants propose amending Fig. 1 of the drawings, amend the specification to improve form, and amend claims 1-4 to improve form. Applicants submit that claims 1 and 2 have not been narrowed by these amendments. Applicants respectfully traverse the Examiner's rejections. Claims 1-4 remain pending.

In paragraph 1 of the Office Action, the Examiner objected to the drawings under 37 C.F.R. § 1.84 because certain reference numbers shown in the drawings were not described in the specification. Reference number 427 has been corrected in Fig. 1 to reference number 627. Reference numbers 503 and 509 have been added to the specification at page 18. Reference number 25 has been added to the specification at page 20. Applicants submit that no new matter has been added to the specification or drawings. In view of the foregoing, Applicants respectfully request that the objections to the drawings be reconsidered and withdrawn.

In paragraph 2 of the Office Action, the Examiner objected to the specification for minor informalities. Applicants have corrected each of the informalities noted by the Examiner. Accordingly, Applicants respectfully request that the objections to the specification be reconsidered and withdrawn.

In paragraphs 4 and 5 of the Office Action, the Examiner rejected claim 2 under 35 U.S.C. § 112, second paragraph, as allegedly indefinite for failing to particularly point out and distinctly claim that which Applicants regard as the invention. In particular, the Examiner alleged that "said intelligent communications network" in claim 2 lacks antecedent basis.

Applicants have amended claim 2 to recite "said intelligent network," which finds support in the preamble of claim 2. Accordingly, Applicants respectfully request that the rejection of claim 2 under 35 U.S.C. § 112 be reconsidered and withdrawn.

In paragraph 7 of the Office Action, the Examiner rejected claims 1 and 2 under 35 U.S.C. § 102(e) as allegedly anticipated by Ueno et al. Applicants respectfully traverse the rejection.

Ueno et al. discloses a system for decreasing communication costs when providing real time data, such as video-on-demand (col. 7, lines 61-63).

By contrast, the present invention recited in claim 1, for example, includes a combination of features of a service administration system that distributes service processing resources among one or more service nodes of an intelligent communications network, where each service node provides services at a network resource associated with a service node. The system includes a device for receiving re-usable service components for providing services at a service node of the intelligent communications network, where each service component has an associated service profile defining service node resources required for storing, maintaining and executing the service; a device for receiving configuration criteria including physical resource capacity of each service node of the network; a database device for storing said received service components, the service node configuration criteria, and service profile associated with the service components; a distribution mechanism for distributing copies of the service components to one or more service nodes according to the service profile information associated with a service and a configuration criteria of the service nodes; and a trigger mechanism for automatically activating and deactivating the service component distributed to the service node, wherein the utilization of

service node resources are optimized by activating the service components at service nodes during periods of high demand for an associated service and deactivating service components at service nodes during periods of low demand for the service.

A proper rejection under 35 U.S.C. § 102 requires that a single reference teach every aspect of the claimed invention either expressly or impliedly. Any feature not directly taught must be inherently present. See M.P.E.P. § 2131. Ueno et al. does not disclose or suggest each of the features recited in claim 1. For example, Ueno et al. does not disclose a device that receives re-usable service components for providing services at a service node of an intelligent communications network, where each service component has an associated service profile that defines service node resources required for storing, maintaining and executing the service.

The Examiner alleged that Ueno et al. discloses these features and cited column 2, lines 28-30, column 20, lines 14-19, and column 5, lines 9-18, of Ueno et al. for support (Office Action, paragraph 7). Applicants respectfully disagree.

At column 2, lines 28-30, Ueno et al. discloses:

> In addition, in the conventional system, the video, which has been stored for the previous client, is reused when another client accesses thereto.

The Examiner seemingly equates the videos with the re-usable service components recited in claim 1. Ueno et al. does not disclose that the videos, however, provide services at a service node of an intelligent communications network, as recited in claim 1. Nor does Ueno et al. disclose that each of the videos has an associated service profile that defines service node resources required for storing, maintaining, and executing the service, as also recited in claim 1.

At column 20, lines 14-19, Ueno et al. discloses:

> Moreover, in a case where the service source 1007 ensures only the resources required to offer the video source among the reserved resources and releases unnecessary resources, the unnecessary bands are able to be reused for services in the actual transmission of video, so that it is possible to effectively use the network resources.

The Examiner seemingly also equates bands of transmission lines with the service components recited in claim 1. Ueno et al. does not disclose that the bands, however, provide services at a service node of an intelligent communications network, as recited in claim 1. Nor does Ueno et al. disclose that each of the bands has an associated service profile that defines service node resources required for storing, maintaining, and executing the service, as also recited in claim 1.

At column 5, lines 5-19, Ueno et al. discloses:

> service control means for accepting a demand for services from a user, and for directing the communication-network-resources management control means and the storage-resources management control means to reserve resources on the basis of the state of resources obtained by the communication-network-resources management control means and the storage-resources management control means, the control means informing the user of a real-time data, which is able to be offered immediately if selected, as a real-time data to be selected, and the control means also informing the user of a real-time data wherein the reservation for resources sufficient to be offered immediately if selected, as a proposed real-time data which is not guaranteed to be offered immediately.

Contrary to the Examiner's assertion, this section of Ueno et al. does not disclose that each of the service components (videos or bands, as alleged by the Examiner) has an associated service profile that defines service node resources required for storing, maintaining, and executing the service, as recited in claim 1.

Ueno et al. does not disclose a database device that stores received service components, service node configuration criteria, and service profile associated with the service components, as also recited in claim 1. The Examiner alleged that Ueno et al. discloses these features and

cited column 4, line 27 and column 4, line 67 - column 5, line 4 of Ueno et al. for support (Office Action, paragraph 7). Applicants respectfully disagree.

At column 4, line 27, Ueno et al. discloses a "plurality of data storage means, each storing a real-time data." This section of Ueno et al. does not disclose service components, service node configuration criteria, and service profiles stored in a database device, as recited in claim 1.

At column 4, line 67 - column 5, line 5, Ueno et al. discloses:

> storage-resources management control means for managing the kind of the real-time data stored in the data storage means, and for managing the number of real-time data being able to be transmitted by the data storage means at the same time, to determine one of the plurality of data storage means, by which a required real-time data is to be transmitted.

This section of Ueno et al. also does not disclose service components, service node configuration criteria, and service profiles stored in a database device, as recited in claim 1.

Ueno et al. does not disclose a distribution mechanism that distributes copies of the service components to one or more service nodes according to the service profile information associated with the service and the configuration criteria of the service nodes, as further recited in claim 1. The Examiner alleged that Ueno et al. discloses these features and cited column 4, lines 60-61, of Ueno et al. for support (Office Action, paragraph 7). Applicants respectfully disagree.

Column 4, lines 60-61, of Ueno et al. discloses "communication means for transmitting the real-time data." Contrary to the Examiner's assertion, this section of Ueno et al. does not disclose distributing copies of service components according to service profile information associated with the service and configuration criteria of the service nodes, as recited in claim 1.

For at least these reasons, Applicants submit that claim 1 is not anticipated by Ueno et al.

Independent claim 2 recites features similar to the features described above with regard to claim 1. Claim 2 is, therefore, not anticipated by Ueno et al. for reasons similar to those given with regard to claim 1.

In paragraph 9 of the Office Action, the Examiner rejected claims 3 and 4 under 35 U.S.C. § 103(a) as allegedly unpatentable over Ueno et al. in view of Yagel et al. Applicants respectfully traverse the Examiner's rejection.

Applicants first note that the Examiner's rejection of claims 3 and 4 based on a combination of Ueno et al. and Yagel et al. is improper. The Examiner cited Ueno et al. as a primary reference, but did not allege that Ueno et al. discloses any of the features of claims 3 and 4. Instead, the Examiner only identified features not disclosed by Ueno et al. The Examiner then alleged that Yagel et al. discloses all of the features recited in claims 3 and 4. Thus, it is unclear what the grounds of rejection are with respect to claims 3 and 4. Clarification is requested.

Yagel et al. discloses a system for commissioning telecommunication services that includes a first toolkit for building a service logic program, and a second toolkit for building a service management program, where the service management program implements a support service for the service logic program (col. 1, lines 58-63). A distribution network node is used to receive and distribute the service logic program and service management programs to a service logic execution environment residing in a telecommunications network node that executes the service logic program and a management logic execution environment for executing the service management program (col. 1, line 63 - col. 2, line 2).

By contrast, the present invention recited in amended claim 3, for example, includes a combination of features of a service processing system that controls a communications network having multiple service nodes, where each service node comprises at least one logic execution environment that hosts managed objects. The service processing system includes a data manager and at least one service administrator. The data manager maintains at each service node a local storage of managed objects and data needed for service processing within the service node and monitors the operational status of the local storage at the service nodes. The at least one service administrator controls the deployment and activation of services within the service processing system by distributing, from a global repository, managed objects and data to one or more data managers associated with the service nodes in the communications network.

Neither Ueno et al. nor Yagel et al., whether taken alone or in any reasonable combination, discloses or suggests this claimed combination. For example, neither Ueno et al. nor Yagel et al. discloses or suggests a data manager that maintains a local storage of managed objects and data needed for service processing at each service node and monitors the operational status of the local storage of the service nodes, as recited in amended claim 3.

For at least these reasons, Applicants submit that claim 3 is patentable over Ueno et al. and Yagel et al., whether taken alone or in any reasonable combination.

Amended independent claim 4 recites features similar to the features described above with regard to claim 3. Claim 4 is, therefore, patentable over Ueno et al. and Yagel et al., whether taken alone or in any reasonable combination, for reasons similar to those given with regard to claim 3.

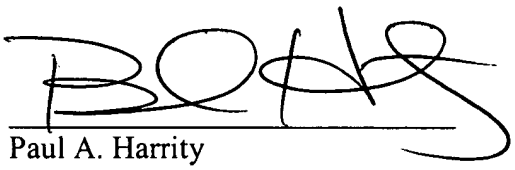
In view of the foregoing amendments and remarks, Applicants respectfully request the Examiner's reconsideration of the application and the timely allowance of pending claims 1-4.

If the Examiner does not believe that all pending claims are now in condition for allowance, the Examiner is urged to contact the undersigned to expedite prosecution of this application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 13-2491 and please credit any excess fees to such deposit account.

Respectfully submitted,

HARRITY & SNYDER, L.L.P.



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VERSION WITH MARKINGS TO SHOW CHANGES

IN THE SPECIFICATION:

The specification has been amended as follows:

The paragraph beginning at page 8, line 26, has been amended as follows:

In still another preferred exemplary embodiment, the local database of record at each service processing node is maintained by at least one data management component. The data management component [make] makes managed objects and other data available to service processors at the service processing node. In particular, the data management component serves as a persistent store for managed objects, operating data such as adjacent node connection information, and other data created during service processing. Data management component also controls the replication of managed objects within various service logic execution environments (SLEE's) at the service processing node. By virtue of maintaining a local storage, the data management component affords fast restoration of normal operations after, or in response to, [an] a network equipment failure, maintenance switchover, or other similar circumstances. For example, if a service processing hardware element suddenly fails, the service processing context can be replicated in another processor and the service resumed without interruption. Having the data and managed objects stored locally at each service processing node provides for fast fail-over and recovery without the delays associated with retrieving managed objects from the network service administrator component.

The paragraph beginning at page 18, line 5, has been amended as follows:

As shown conceptually in Figure 3(a), the Service Administration component 500 is a component that performs all of the functions needed to manage, store, and distribute all services and service data used by service processing nodes and to configure both the hardware and software components throughout the network control system depicted in Figure 1. Generally, as show in Figure 3(a), the SA component 500 is responsible for: cataloguing and storing the created objects and data from MOCE (Service Creation) 228; returning official copies of managed objects and data to MOCE 228 for service development purposes; requesting service packages, SIBBs, SLPs or other service or data components 503 from MOCE 228; receiving completed and tested service packages, SIBBs, SLPs or other service or data components 506 from MOCE 228; receiving customer order data 502 from order entry and other legacy systems 229 to provision the IDNA/NGIN system for use by customer; providing unique names to each service component; and, deploying managed objects and data to network service processors via Data Management functions 600, as will be described in greater detail herein.

The paragraph beginning at page 18, line 31, has been amended as follows:

Other responsibilities of Service Administration include: activating data and service components 512 to ensure that all data, SIBBS and managed objects or service logic programs SLPs are available for nodes via the Data Management component 600; registering the names of the data, SLPs and SIBBs 515 by feeding their logical names to a Network Operating System ("NOS") component 700, to be described in detail below, for registration therewith; distributing data and service components 509; deactivating data and service components 518; and, removing data and services 521 from the IDNA/NGIN system via the Data Management component 600. Service Administration additionally performs a configuration management function by

maintaining the state of each SIBB and service (pre-tested, post-tested, deployed, etc.), in addition to versioning through its naming process. This ensures a service is not deployed until all components of that service have been successfully tested and configured.

The paragraph beginning at page 20, line 7, has been amended as follows:

Figure 3(b) illustrates a preferred physical architecture for Service Administration component 500. While Service Administration is a centralized function, it may be embodied as two or more redundant Service Administration sites, e.g., sites 550a, 550b, for reliability with each SA site comprising: SA Servers 560, which may comprise dual redundant processors with a shared disk array 25 comprising the global DBOR 230; and, a personal computer (PC) or workstation 556a,b resident at each respective site 550a, 550b having an interface to enable user access to all Service Administration functions and particularly initiate data and service distribution to specified IDNA/NGIN service nodes, depicted in Figure 3(b) as services nodes 204. The aforementioned data and service distribution activation functions all execute on one or more SA Servers 560 found at each site. The components at each respect SA site 550a,b are connected by an Ethernet LAN 559, which, in turn, is linked to a WAN 566 for communication with the service nodes.

The paragraph beginning at page 23, line 27, has been amended as follows:

As further shown in Figure 3(c), the SA component 500 comprises the following sub-components: [as] an Inventory Manager 516; a DBOR Manager 520; an Environment Manager 530; an Audit and Reconciliation Manger 535, and, a Monitoring and Logging Manager 540. The functions of each of these will now be explained in greater detail.

The paragraph beginning at page 26, line 20, has been amended as follows:

The Audit and Reconciliation (A/R) Manager 535 ensures data synchronization among the DBOR and its multiple extracts by running auditing routines to compare the data in the DBOR 230 with data in any of various DBOR extracts. It then determines corrective actions to re-sync the multiple databases. To implement these actions, the A/R Manager generates a data package containing data and commands to process [these] this data. This data package is then provided to whichever databases [is] are needed to implement the corrective action to re-sync the multiple databases. Preferably, this may be accomplished as follows: 1) during system idle time, it may run an auditing routine to look for and resolve any discrepancies between the data in the DBOR and the data in a DBOR extract, which may reside in a local Data Management database at a service node; and, 2) during real-time call processing, if a service application finds a discrepancy, e.g., a service application is given a key for a data lookup in Data Management, queries a database with this key, but finds no record, the application generates an alarm. This alarm is sent to the A/R Manager 535, which resolves the discrepancy.

The paragraph beginning at page 28, line 11, has been amended as follows:

Having described the preferred embodiment of the SA component 500, a more detailed description of the major services performed by Service Administration 500, is now provided with reference to Figures [5(c)-5(e)] 3(c)-3(e).

The paragraph beginning at page 29, line 9, has been amended as follows:

As a second major service, service administration component [300] 500 is responsible for service provisioning, i.e., provisioning services with data needed to provide those services. This

type of data is input to SA from the Order entry feed 502 and is stored in the global DBOR 230 prior to distribution to Data Management 600. This type of data may include, but is not limited to, customer profile data, such as customer service options, customer name and account data, terminating telephone numbers, call routing data, and any data potentially needed to process and complete a call for a service. As an example, when a 1-800 service is built in Service Creation for a corporate customer, that customer's name, account/billing information, 800 telephone number(s), terminating network addresses, service options (routing features, multi-media file identifiers) received from the OE system are need to provision the particular service(s). In this function, Service Administration 500 parses appropriate order entry feeds to create a consolidated and consistent order entry record to the NGIN and ensures that each feed received from an order entry system or from a provisioning system is acknowledged.

The paragraph beginning at page 31, line 11, has been amended as follows:

Additionally generated in the SA for each service is a service profile, which may be embodied as a formatted data file in SA, that specifies [that] the service's requirements and to which SLEE(s) and/or computers within the network it should be deployed. An example service profile for a particular service to be deployed in the network is depicted in Table 2 as follows:

The paragraph beginning at page 32, line 3, has been amended as follows:

In Table 2, there is specified: a service profile name, e.g., service #1001 for a customer X; amount of processing units, memory, and disk space required to execute the service when instantiated; a node instantiate field(s) specifying a time range when a particular service (embodied as a service logic program, for example) is to be instantiated according to a

predetermined business rule(s) specified in Service Administration, and a corresponding min/max field(s) indicating the minimum and maximum number of those service objects (SLPs) that may be instantiated by NOS during the specified time range; a special requirements field(s) indicating for example, that the service requires a particular service node capability, e.g., voice playback; and, [a] service start data and service end [date] data. It is readily apparent that SA may distribute the service (and service profile) of the example service 1001 of Table 2 to the service node having the service node profile depicted in Table 1, as the node clearly has the memory requirements and the voice playback support. It is additionally apparent that the example service #1001 depicted in the service profile in Table 2, requires a data set from customer X that would comprise, inter alia, a voice playback service announcement specific to that service #1001 provided by customer X. The SA component 500 will receive data via order entry feed [307] 502 that includes the customer X voice playback announcement, and SA's inventory manager will assign it as a data set #1001, for example, for storage in the DBOR 230. In this manner, SA may automatically distribute the dataset #1001 to the service node(s) providing the service #1001 for customer X.

The paragraph beginning at page 39, line 9, has been amended as follows:

According to this fifth SA function, an explanation of how the IDNA/NGIN system handles service construction and deployment phases, is now provided with reference to Figures [5(g) and 5(h)] 3(g) and 3(h) which illustrate a scenario of steps in constructing and deploying an SLP for the IDNA/NGIN system, e.g., for a 1-800 Collect ("1-800-C") service. As indicated at step 812 in Figure 3(g), the MOCE/SCE application program enables the user to access from SA all of the SIBB, SLP, data and other building blocks that are necessary for the

creation of the 1-800-C SLP. In the example context of 1-800-C service, such building blocks may include: a play audio building block, a collect digits building block and a voice recognition building block. Copies of these appropriate building blocks are pulled from the global DBOR 230 buy SA into the MOCE/SCE to provide the foundation for developing the 1-800-C Service Logic Program, as indicated at step 814, Figure 3(g). Then, as indicated at step 819, the 1-800-C Service Logic Program and all associated data such as voice files are unit tested within the MOCE/SCE environment. Next, as indicated at step 820, the 1-800-C Service Logic Program will execute correctly once distributed in the network. Then, as indicated at step 823, the 1-800-C Service Logic Program is submitted to the Service whether the 1-800-C SLP can be activated at all repositories where the distribution was successfully received.

The paragraph beginning at page 40, line 3, has been amended as follows:

As described herein, the Service Administration component allows the introduction of rules governing data and information distribution, data activation and data removal. Thus, as indicated at step 826, the SA component checks the rules that specify the Data Management repositories that are to receive the Service Logic Program and, the rules regarding the minimum number of repositories that must receive the distribution prior to allowing activation of the 1-800-C SLP. To do this, as indicated at step 830, Service Administration checks the status of the Data Management repositories by accessing the NOS Network Resource Management function, as described generally herein and in greater detail in [co-pending] U.S. Patent [Application] No. 6,425,005 [_____ (D#11357, COS-98-029)] entitled METHOD AND APPARATUS FOR MANAGING RESOURCES IN AN INTELLIGENT NETWORK. Then, as shown at step

832, Figure 3(h), the Service Administration component determines those DM repositories indicating "On-line" status, and, at step 835, distributes the 1-800-C SLP to all the DM repositories that are on-line. For those repositories reporting an off-line status, Service Administration stores the distribution for future forwarding to the off-line repository, as indicated at step 837. Then, as indicated at step 840, the Service Administration component waits [unit] until Data Management returns a status for each repository indicating the success or failure of the distribution. A determination is made at step 842 to determine whether the confirmation has been received from the respective DM repository. If the confirmation is not received, the SA waits for the confirmation as indicated at step 844. Once the confirmation is received, the process continues to step 845 where a determination is made by Service Administration as to whether the 1-800-C SLP can be activated at all repositories where the distribution was successfully received.

IN THE CLAIMS:

The claims have been amended as follows:

1. (Amended) A service administration system for distributing service processing resources among one or more service nodes of an intelligent communications network, each service node providing services at a network resource associated with a service node, said system comprising:

[a)] a device for receiving re-usable service components for providing services at a service node of said intelligent communications network, each said service component having an

associated service profile defining service node resources required for storing, maintaining and executing said service;

[b)] a device for receiving configuration criteria including physical resource capacity of each service node of said network;

[c)] a database device for storing said received service components, said service node configuration criteria, and service profile associated with said service components;

[d)] a distribution mechanism for distributing copies of said service components to one or more service nodes according to said service profile information associated with a service and a configuration criteria of said service nodes; and[,]

[e)] a trigger mechanism for automatically activating and deactivating said service component distributed to said service node, wherein utilization of service node resources are optimized by activating said service components at service nodes during periods of high demand for an associated service and deactivating service components at service nodes during periods of low demand for said service.

2. (Amended) A method for administering service components to one or more service nodes comprising an intelligent network, each service node providing one or more services relating to an event received at a network resource associated with a service node, said method comprising [the steps of]:

[a)] receiving re-usable service components for providing services at a service node of said intelligent [communications] network, each said service component having an associated

service profile defining service node resources required for storing, maintaining and executing said service;

[b)] receiving configuration criteria including physical resource capacity of each service node of said network;

[c)] maintaining [an] a database including master copies of said received service components, said service node configuration criteria, and service profile associated with said service components;

[d)] distributing copies of said service components to one or more service nodes according to said service profile information associated with a service and a configuration criteria of said service nodes; and[,]

[e)] forwarding a trigger to said service node for automatically activating and deactivating a service component distributed to said service node, whereby a service component distributed to said service node is activated during periods of high demand for an associated service and deactivated at service nodes during periods of low demand for said service.

3. (Amended) A service processing system for controlling a communications network having a plurality of service nodes, each service node comprising at least one logic execution environment that hosts managed objects, said service processing system comprising:

a data manager for maintaining at each service node a local storage of managed objects and data needed for service processing within the service node and monitoring operational status of the local storage at the service nodes; and

at least one service administrator that controls the deployment and activation of services within said service processing system by distributing, from a global repository, managed objects and data to one or more data managers associated with said service nodes in said communications network.

4. (Amended) A method for controlling the deployment and activation of services in a communications network having a plurality of service nodes, each service node comprising at least one logic execution environment that hosts managed objects, said method comprising [the steps of]:

maintaining at each of said service nodes a local data store of managed objects and data needed for service processing within the service node;

monitoring operational status of the local data store of the service nodes; and

selectively distributing, from a global repository, managed objects and data to one or more of said local stores associated with said service nodes in said communications network, so as to control where and when services are deployed and activated in said communications network.